

Donald T. Lewis.  
Lowell Bleachery  
Laboratory.

Vat Colors,

1927

at color procedure.

To the color add 2 ccs. of caustic and 1 gm. of hydrosulphite. Heat the solution to 50° C., however, before adding hydrosulphite.

To the dye bath add 1 cc. of caustic and a sufficient amount of hydrosulphite to expel all oxygen present.

Add required color to the bath and test for alkalinity and the presence of hydrosulphite.

Dye 5 mins. cold then raise the temperature of the bath to 50° C. after which allow the bath to slowly cool.

Allow the cloth to oxidize in the air then immerse it in hot chrome and boiling soap.

NOTE: The cloth should be wet out in water containing about 2 ccs. of soluble oil.

Processes.

I N.

1 gm. color

4 ccs. 76° Tw. Caustic.

1.2 gms. Lykapon.

1 qt. of 76° Tw.

Caustic contains

2 1/2 lbs. of Caustic.

Reduce at 120°F & dye at 120°F. No Salt.

I W.

1 gm. color.

2 ccs. 76° Tw. Caustic.

1.2 gms. Lykapon.

Reduce at 120°F & dye at 110°F. Has 3% & 10% dyings use 6% & 12% NaCl.

I K.

1 gm. color.

2 ccs. 76° Tw. Caustic.

1.2 gms. Lykapon.

90-

Reduce at 120°F & dye at 100°F. Has 3% & 10% dyings use 12% & 24% NaCl.



Vat Colors  
Standard Dyeings

6/28/26 Indanthrene Grey GK Paste,  
From General Dyestuff. Price: \$1.21.



Color 3%  
Dyed 35 mins.



Color 10%  
Dyed 35 mins.

7/1/26 Indanthrene Khaki G-G (Paste),  
From General Dyestuff. Price: \$1.43



Color 3%  
Dyed 35 mins.



Color 10%  
Dyed 35 mins.

7/1/26 Ponsol Blue RS. (Paste),  
From DuPont Co.

Price: \$1.38



Color 3%  
Dyed 35 mins.



Color 10%  
Dyed 35 mins.

7/1/26 Ponsol Blue GCD (Dbl. Pdr.),  
From DuPont Co.

Price: \$2.18



Color 3%  
Dyed 35 mins.



Color 10%  
Dyed 35 mins.

7/1/26 Indanthrene Brown G (Paste).  
From General Dyestuff. Price: \$1.60



Color 30%  
Dyed 35 mins.  
NaCl 6%



Color 10%  
Dyed 35 mins.  
NaCl 15%

7/2/26 Ciba Violet R (Paste) From-Ciba Co.



Color 30%  
NaCl 6%  
Dyed 35 mins.



Color 10%  
NaCl 15%  
Dyed 35 mins.

7/2/26 Ponsol Brill. Green G (Paste).  
From DuPont Co. Price: \$2.05



Color 30%  
Dyed 35 mins.



Color 10%  
Dyed 35 mins.

7/2/26 Ponsol Yellow G (Dbl Pdr.).  
From DuPont Co. Price: \$3.28



Color 30%  
Dyed 35 mins.



Color 10%  
Dyed 35 mins.



6/14/27 Fonso Golden Orange RRT Dbl. Pdx  
From Du Pont Co. Price: \$3.63

FN



Color 3%  
NaCl 5%  
Dyed 1 hour



Color 10%  
NaCl 10%  
Dyed 1 hour

(45 mins. Dye; 15 mins. cool for exhaustion).

6/15/27 Indanthrene Black BB Dbl. Pst.  
From General Dyestuff Corp. Price: \$2.00

FN



Color 3%  
NaCl 0%  
Dyed 1 hour



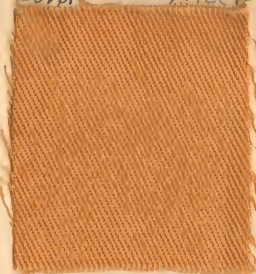
Color 10%  
NaCl 0%  
Dyed 1 hour

Wash, 10% Chem. for 15 minutes, wash, soap

FW Indanthrene Brown R Pst. 6/15/27  
From General Dyestuff Corp. Price: \$2.00



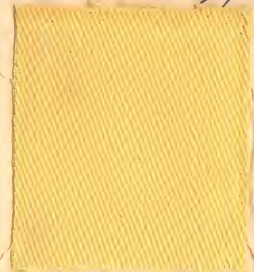
Color 3%  
NaCl 6%  
Dyed 1 hour



Color 10%  
NaCl 12%  
Dyed 1 hour

6/15/27 Indanthrene Golden Yellow GK Dbl. Pst.  
From General Dyestuff Corp. Price: \$2.78

EK



Color 3%  
NaCl 12%  
Dyed 1 hour



Color 10%  
NaCl 24%  
Dyed 1 hour

6/15/27. Hydron Blue R Pdr. IN

From General Dyestuff Corp. Price:



Color 3%

NaCl 6%

Dyed 1 hour



Color 10%

NaCl 12%

Dyed 1 hour.

7/8/27. Indanthrene Olive R. Pdr. FW

From General Dyestuff Corp.

Price: \$10.85



Color 3%

NaCl 6%

Dyed 1 hour



Color 10%

NaCl 12%

Dyed 1 hour.

7/8/27.

Indanthrene Blue BCSO Pdr. FW

From General Dyestuff Corp.

Price:



Color 3%

Dyed 1 hour



Color 10%

Dyed 1 hour

7/8/27. Indanthrene Orange 3R Pdr. FW

From General Dyestuff Corp.

Price: \$17.12 in bbls.



Color 3%

NaCl 6%

Dyed 1 hour



Color 10%

NaCl 12%

Dyed 1 hour



7/8/27.

Hydron Pink FB Bst. E.K.  
From General Dyestuff Corp. Price:



Color 3%  
NaCl 12%  
Dyed 1 hour



Color 10%  
NaCl 24%  
Dyed 1 hour

7/8/27. Indanthrene Pink B Dbl. Bst. E.K.  
From General Dyestuff Corp. Price: \$4.18



Color 3%  
NaCl 12%  
Dyed 1 hour

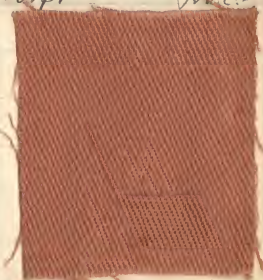


Color 10%  
NaCl 24%  
Dyed 1 hour

7/8/27. Indanthrene Red Brown R Bst. F.N.  
From General Dyestuff Corp. Price: \$7.41



Color 3%  
NaCl 6%  
Dyed 1 hour



Color 10%  
NaCl 24%  
Dyed 1 hour

7/8/27. Indanthrene Violet B Pdv. F.N.  
From General Dyestuff Corp. Price: \$7.41



Color 3%  
Dyed 1 hour



Color 10%  
Dyed 1 hour

7/12/27.

Indanthrene Dark Blue BOA Pdr. IN

From General Dyestuff Corp. Price: \$7.48



Color 3%

Dyed 1 hour



Color 10%

Dyed 1 hour

7/12/27. Indanthrene Dark Blue BGO Pdr. IN

From General Dyestuff Corp. Price: \$6.80



Color 3%

Dyed 1 hour

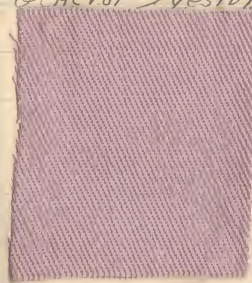


Color 10%

Dyed 1 hour

7/12/27. Indanthrene Corinth RK Pst. IN

From General Dyestuff Corp. Price: \$7.70



Color 3%

NaCl 12%

Dyed 1 hour



Color 10%

NaCl 24%

Dyed 1 hour

7/12/27. Pansol Green BN Pst. IN

From Dyestuff Co. Price: \$7.35



Color 3%

Dyed 1 hour



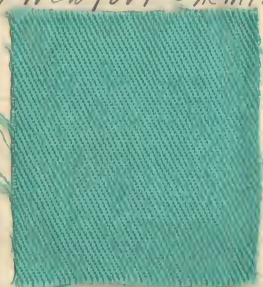
Color 10%

Dyed 1 hour



7/13/27.

Anthrene Jade Green 200% Bst. ~~IN~~  
From Newport Chemical Works. Price:-



Color 3%

Dyed 1 hour



Color 10%

Dyed 1 hour.

7/12/27.

Anthrene Blue 36X Bst. ~~IN~~  
From Newport Chemical Works. Price:-



Color 3%

Dyed 1 hour



Color 10%

Dyed 1 hour.

7/12/27.

Anthrene Black C Bst. ~~IN~~  
From Newport Chemical Works. Price:-



Color 3%

Dyed 1 hour.



Color 10%

Dyed 1 hour.

7/12/27.

Duranthrene Pink B Ddl. Bst. ~~IN~~  
From Drestuff Corp. Price:- \$4.00



Color 3%

NaCl 12%

Dyed 1 hour



Color 10%

NaCl 24%

Dyed 1 hour

7/13/27.

Sulfanthrene Blue GR Pst. I. N.

From Dupont Co.

Price: - \$0.53



Color 3%

Dyed 1 hour.



Color 10%

Dyed 1 hour.

7/13/27. Ponsol Violet RRD Pst. I. N.

From Dupont Co.

Price: - \$2.50



Color 3%

Dyed 1 hour.



Color 10%

Dyed 1 hour.

7/14/27. Sulfanthrene Orange R Pst. I. N.

From Dupont Co.

Price: - \$1.20



Color 3%

Dyed 1 hour.



Color 10%

Dyed 1 hour.

7/14/27. Indanthrene Grey 3B Dbl. Pst. I. N.

From General Dyestoff Corp.

Price: - \$2.45



Color 3%

Dyed 1 hour.



Color 10%

Dyed 1 hour.



7/14/27. Sulfanthrene Pink FF Pst. FN.  
From DuPont Co. Price:-

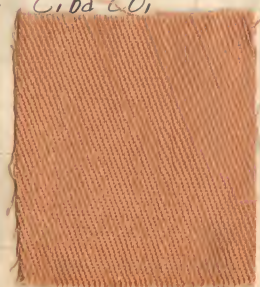


Color 3%  
Dyed 1 hour



Color 10%  
Dyed 1 hour

7/25/27. Ciba Brown G Dbl. Pst. FN  
From Ciba Co. Price:-



Color 3%  
Dyed 1 hour



Color 10%  
Dyed 1 hour

7/25/27. Anthrene Black DS. 1st. FN.  
From Newport Chemical Works. Price:-



Color 3%  
Dyed 1 hour



Color 10%  
Dyed 1 hour

7/25/27. Anthrene Black B Dbl. Pst. FN  
From Newport Chemical Works. Price:-



Color 3%  
Dyed 1 hour



Color 10%  
Dyed 1 hour

7/25/27. Anthrene Black BB Pst. IN  
From Newport Chemical Works. Price:-



Color 3%

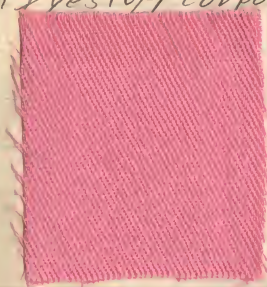
Dyed 1 hour



Color 10%

Dyed 1 hour.

7/25/27. Duvanthrene Red AFF Dbl. Pst. IK  
From Dyestoff Corporation. Price:- \$2.50



Color 3%  
NaCl 12%

Dyed 1 hour



Color 10%  
NaCl 24%

Dyed 1 hour.

7/26/27. Tonsol Blue BCS Dbl. Pst. IN  
From DuPont Co. Price:- \$1.83 per 100



Color 3%

Dyed 1 hour



Color 10%

Dyed 1 hour

7/26/27. Sulfanthrene Scarlet 2B Pst. IN  
From DuPont Co. (Reduces at 200°F). Price:-  
From DuPont Co. Price:-



Color 3%  
Dyed 1 hour



Color 10%  
Dyed 1 hour



(Anthra Yellow GC).

7/26/27. Anthrene Flavone GC Pst. FN  
From Newport Chemical Works. Price:-



Color 3%

Dyed 1 hour



Color 10%

Dyed 1 hour

7/26/27. Anthra Green B Dbl. Pst. FN  
From General Dyestuff Co. Price: \$2.<sup>00</sup>



Color 3%

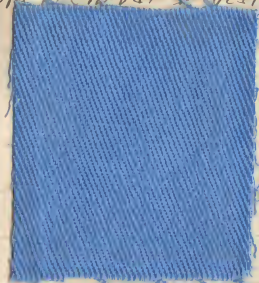
Dyed 1 hour



Color 10%

Dyed 1 hour

7/26/27. Indanthrene Blue BCD Dbl. Pst. FN  
From General Dyestuff Co. Price: \$1.<sup>82</sup>



Color 3%

Dyed 1 hour



Color 10%

Dyed 1 hour

7/26/27. Fonso Black B Conc. Pdr. FN  
From Pu Pont Co. Price: \$3.<sup>53</sup>



Color 3%

Dyed 1 hour



Color 10%

Dyed 1 hour

7/26/27. Indanthrene Orange 6 RTK Pdr. IF.  
From General Dyestuff Corp. Price: \$6.93



Color 3%  
NaCl 12%

Dyed 1 hour



Color 10%  
NaCl 24%

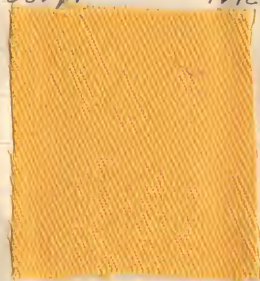
Dyed 1 hour

7/26/27. Indanthrene Yellow RK Bst. IF.  
From General Dyestuff Corp. Price: \$2.60



Color 3%  
NaCl 12%

Dyed 1 hour



Color 10%  
NaCl 24%

Dyed 1 hour

7/26/27. Hydron Orange R Bst. IF.  
From General Dyestuff Corp. (Reduces at 200°F). Price: \$1.80



Color 3%  
NaCl 6%

Dyed 1 hour



Color 10%  
NaCl 12%

Dyed 1 hour

7/26/27. Indanthrene Blue 3GT Pdr. IF.  
From General Dyestuff Corp. Price: \$7.19



Color 3%

Dyed 1 hour



Color 10%

Dyed 1 hour



7/26/27 Cibacron Olive B Pdr. FW  
 Ciba Co.  
 From General Dye stuff Corp. Price: \$2.50



Color 3%

Dyed 1 hour



Color 10%

Dyed 1 hour

7/26/27 Cibacron Brown B2R Pdr. FW  
 Ciba Co.  
 From General Dye stuff Corp. Price: \$7.50



Color 3%

NaCl 6%

Dyed 1 hour



Color 10%

NaCl 12%

Dyed 1 hour

7/26/27 Indanthrene Brown RT Pst. FW  
 From General Dye stuff Corp. Price:



Color 3%

NaCl 6%

Dyed 1 hour



Color 10%

NaCl 12%

Dyed 1 hour

7/28/27 Indanthrene Red Violet RRP Pst.  
 From General Dye stuff Corp. Price: \$3.88 FW



Color 3%

NaCl 12%

Dyed 1 hour



Color 10%

NaCl 24%

Dyed 1 hour

7/28/27. Hydron Blue G 30% Kst. IN  
From General Dye stuff Corp. Price:-



Color 3%

Dyed 1 hour



Color 10%

Dyed 1 hour.

7/28/27. Indanthrene Red Violet RKK Pst. IN  
From General Dye stuff Corp. Price: 2.65



Color 3%

NaCl 12%

Dyed 1 hour

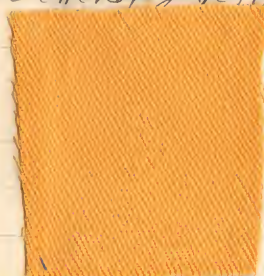


Color 10%

NaCl 24%

Dyed 1 hour

7/28/37. Indanthrene Yellow 3RT Dbl. Pst. IN  
From General Dye stuff Corp. Price: 3.19



Color 3%

Dyed 1 hour



Color 10%

Dyed 1 hour

8/31/27. Indanthrene Dark Blue RQ Pst. IN  
From General Dye stuff. Price: 2.70



Color 3%

Dyed 1 hour.



Color 10%

Dyed 1 hour.



8/31/27. Fm danthrene Red Violet RRN New Line Bst. IN.  
From General Dvestoff Corp. Price \$7.78



Color 3%

Dyed 1 hour



Color 10%

Dyed 1 hour

8/31/27. Hydron Olive R Pdv. IN.  
From General Dvestoff Corp. Price



Color 3%

Dyed 1 hour



Color 10%

Dyed 1 hour

8/31/27. Cibacrome Black B Pdv. IN  
From Giba Co. Price \$7.00



Color 3%

Dyed 1 hour



Color 10%

Dyed 1 hour

8/31/27. Cibacrome Black 2G Pdv. IN  
From Giba Co. Price \$7.60



Color 3%

Dyed 1 hour



Color 10%

Dyed 1 hour

8/31/27. Indanthrene Brown FFR Rst. FW.  
From General Dyestuff Corp. Price:-



Color 3%  
NaCl 6%  
Dyed 1 hour



Color 10%  
NaCl 12%  
Dyed 1 hour

8/31/27. Indanthrene Blue RS Rst, FN,  
From General Dyestuff Corp. Price \$1.30



Color 3%  
Dyed 1 hour



Color 10%  
Dyed 1 hour

8/31/27. Indanthrene Dark Blue BGE. Pdv. FN.  
From General Dyestuff Corp. Price:-  
Dyed at 110°F.



Color 3%  
NaCl 12%  
Dyed 1 hour



Color 10%  
NaCl 24%  
Dyed 1 hour

After treated with Indophor A  
Color

3%  
Indophor A - 10%  
20 minutes at boil.

10%  
Indophor A - 20%  
20 minutes at boil.



Vat Colors on Silk. (Real).  
Self Shades.

4/26/28



Developed with  
Sodium perborate  
& soap.

IN Hydron Blue R Pdv. 10%

4/26/28



Developed with  
Sodium perborate,  
acetic acid &  
soaped.

EX Ind. Brill. Violet RK Pst. 7%

4/26/28.



Developed  
with sodium per-  
borate & soap.

FN Ciba Blue 2G Pdr. 1.5%

4/26/28.



Developed with  
sodium perborate  
& soap.

FN Helindone Red 3B Bt. 15%

4/27/28.



Air oxidized  
& soaped.

FN Indanthrene Grey 4K Bst. 15%

4/27/28.



Air oxidized  
& soaped.

FN Helindone Green G Bst. 50%

4/27/28.



Air oxidized  
& soaped.

FN Indanthrene Green BB Bst. 12%

4/27/28.



Air oxidized  
& soaped.

FN Ciba Blue 2B Pdr. 2%



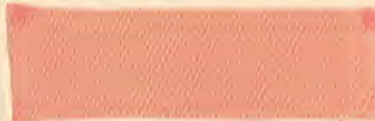
Tubize Colors (For Nitro-cellulose (Tubize Silk))

Dyed for 3/4 of an hour at 185°F. in a 1% soluble oil bath and salted out after 15 minutes of dyeing.

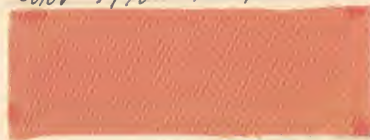
Tubize Fast Red B.F.

6/21/28

Dyed on tubize silk -  
cotton union serge.



Color - 1/4% NaCl - 2.5%



Color - 1/2% NaCl - 3%



Color - 1% NaCl - 10%



Color - 2% NaCl - 20%

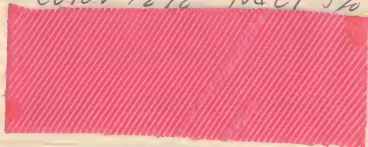
Tubize Fast Red 5B. 6/21/28.



Color -  $\frac{1}{4}\%$  NaCl - 2.5%



Color -  $\frac{1}{2}\%$  NaCl - 5%



Color - 1% NaCl - 10%



Color - 2% NaCl - 20%

Tubize Fast Bordeaux G 6/21/28.



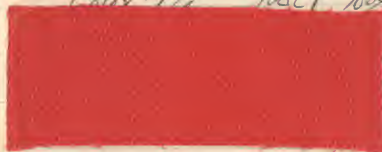
Color -  $\frac{1}{4}\%$  NaCl - 2.5%



Color -  $\frac{1}{2}\%$  NaCl - 5%



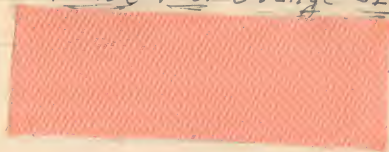
Color - 1% NaCl - 10%



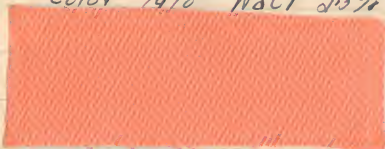
Color - 2% NaCl - 20%



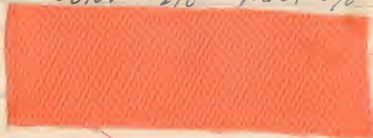
Tubize Fast Orange SE. 6/21/28



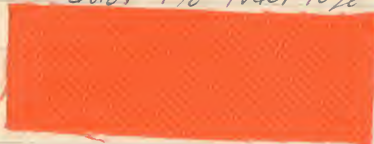
Color -  $\frac{1}{4}\%$  NaCl - 2.5%



Color -  $\frac{1}{2}\%$  NaCl - 5%



Color - 1% NaCl - 10%



Color - 2% NaCl - 20%

Vat Colors on Silk (Red).  
Combination Shades.

4/27/28.



Air oxidized  
 & soaped.

Tyed FN.

Anthrene Jade Green 1st. 30%

Anthra Yellow GC Bt. 20%

4/27/28.



Air oxidized  
 & soaped.

Anthrene Jade Green 1st. 20%

Anthra Yellow GC Bt. 10%



4/27/28.



Air oxidized  
& soaped.

Anthrene Jade Green Rst. 20%

Anthra Yellow GC Rst. 2%



8/30/28.

Staining Effect of Direct Colors on Celanese & Immunized Cotton.

Color	Celanese	Immunized Cotton
Pianol F. Red FGM	stains considerably.	Stains considerably.
Solantine Red 8BLN	Does not stain.	Does not stain.
Erle F. Scarlet 4B A	Stains slightly.	Stains slightly.
Benzo F. Red 8BLN	Does not stain.	Stains considerably.
Erle Pink 2B	" " "	Stains slightly.
Benzo F. Bordeaux 6BL	" " "	" "
Chlorazol F. Orange AG	Stains slightly.	" "
Benzo F. Orange WS	" "	" "
Diamine F. Orange ER	" "	" "
Pyrazol Orange G	Stains considerably.	Stains considerably.
Chlorazol F. Orange G	stains very badly.	stains very badly.
Direct F. Yellow NN	Stains slightly. <del>Does not stain</del>	Stains slightly.
Chrysophenine 3K	Stains.	" ? ?
Fontamine Yellow CH	Stains slightly	" ? ?
Chloramine F. Yellow FF	Stains considerably	" ?
Chlorantine F. Yellow 4GL	Does not stain.	Does not stain.
Direct F. Yellow S & Conc.	Stains very, very slightly.	" ? ?
Erle Yellow Y	Does not stain	" ? ?
Chlorantine F. Green BL.		
Bright Benzo Green B.	Stains slightly.	Stains slightly.



Color	Celanese	Immunized Cotton
Direct Green BG	stains badly.	stains badly.
Direct Blue RW	stains very badly.	stains very badly.
Direct F. Blue FF	Does not stain.	Does not stain.
Pont. Diazo Blue BR	" " "	" " "
Diamine Grey Sky Blue N	" " "	" " "
Direct Sky Blue FF	Stains slightly.	Stains slightly.
Benzo F. Blue 4GLD	" " "	" " "
Pontamine F. Blue 8GL	Does not stain	" "
Chlorantine F. Violet 4BL	" " "	" "
Chlorazol Brown LF	" " "	" "
Benzo F. Brown 3GL	stains badly.	stains badly.
Diphenyl Brown BBN	stains slightly.	stains slightly.
Chlorantine F. Grey RLN	Does not stain.	Does not stain.
Direct Black HN	stains slightly.	stains slightly.
Diazine Black H Ex.	" " "	" " "
Direct F. Black B	Yellow element stains.	
Eric F. Black FB	Yellow element stains very badly.	

## Staining Effect of Direct Colors on Real Silk.

Color	on Silk.
Eric F. Scarlet 8BA.	Stains very, very slightly.
Diphenyl F. Scarlet 4BA.	Stains very slightly.
Benzo F. Red 8BLN.	Stains about 5% of cotton depth.
Chlorantine F. Red 5BL.	" " " " "
Chlorazol F. Orange G.	Yes as heavy as on cotton.
Pontamine Orange S.	Stains about 5% of cotton depth.
Diazine Orange ER.	Does not stain silk.
Eric Orange Y.	Stains about 30% of cotton depth.
Eric Yellow Y.	{ Yes about 3 times as heavy as on cotton.
Pontamine Yellow SX.	Does not stain silk.
Chlorantine F. Yellow 4GL.	Yes as heavy as on cotton.
Pontamine Yellow CH.	Yes about 50% of cotton depth.
Direct Green B.	" " 5% " " "
Benzo F. Blue 4GLD.	Does not stain silk.
Pontamine F. Blue 8GL.	" " " "
Direct Sky Blue 6BG.	" " " "
Nigarda Blue 2B.	" " " "

Color

On Silk.

Direct F. Black B.

Stains very slightly

Nyanza F. Black FOR.

" " "

Pontamine Black EBN.

Stains about 5% as heavy as cotton.

Pluto Black OV.

Stains slightly.

Pontamine F. Black L.N.

" "

Amanil Brown M.

Stains about 5% of cotton depth.

Pontamine Catechu GN.

" " 30% " " "

Evie F. Brown GR.

" " 5% " " "

Pamine Catechine B.

Stains very slightly.

Evie F. Brown GB.

Stains about 5% of cotton depth.



6/12/88.

Aniline Black on Cotton-Celadese Fabric.

Liquor A.

- 5 parts Diphenyl Black Base F (Gen. Dyer.)
- 5 " Aniline oil
- 10 " Lactic Acid 50%
- 30 " Acetic Acid 50%
- 20 " Methylated spirits (Ethyl Alcohol).

Liquor B.

- 5 parts  $AlCl_3$  52° tw.
- 5 "  $CrCl_3$  52° tw.
- 4 "  $CrCl_2$  Crp.
- 6 "  $NaClO_3$
- 23.6 "  $H_2O$
- 100 " Gum Tragacanth 1/100

When ready to use mix one of A to two of B and strain. A liquor is red and B is green. The mixture gives a bluish green.

The cloth was padded through the solution, steamed in a steaming

box at  $100^{\circ}\text{C}$ . for 5 minutes, soaped  
in a soap solution containing 2 grams  
of soap per 500 cc.  $\text{H}_2\text{O}$  for  $\frac{3}{4}$  hour,  
washed and dried.

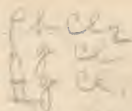


The slightly Black Ball is dissolved  
in the aniline oil by slightly warming.



Method of analysis or separation  
of the metals in each group.

Method of group one  
on filter paper  $PbCl_2$



each ppte with boiling water and  $PbCl_2$   
precipitate insoluble in hot water.

Test for  $Pb$ , add the sup. to food of  $H_2S$  ppte of  $Pb$   
add the  $Cl_2$  - this gives a yellow ppte of  $PbCl_2$

precipitate the black ppte of  $PbS$ .

add  $PbCl_2$  - gives yellow ppte.

step two. add  $HCl + H_2O$  to this sample of  
silver & lead.  $H_2O$  of  $Pb$  ppte and it has  
turned black,  $H_2O$  of  $Pb$  ppte and it has  
turned black,  $H_2O$  of  $Pb$  ppte and it has

$HNO_3$  - this gives  $Cl_2$  of  $H_2O$  again.

$H_2O$  of  $2HNO_3 + 2HNO_3 = H_2O + 2HNO_3$

Old coal yard is on fire

copper group Sulphides of Cu group

#4 Pt Bi Cu Cd



method of separation <sup>total</sup> with  
small nitric acid dissolve all with Hg

+ get NO<sub>3</sub> of these 4 metals

dissolve Hg with aqua regia

nothing left + H<sub>2</sub>O - evaporate nearly

dry grass to remove Cl & then

Hg is insoluble / add water to both

Hg is soluble of all free sulphur

test for Hg 2 HgCl<sub>2</sub> + SnCl<sub>2</sub> = 2 Hg + SnCl<sub>4</sub>

2<sup>nd</sup> reaction 2 HgCl<sub>2</sub> + SnCl<sub>2</sub> = 2 Hg + SnCl<sub>4</sub>

add strong H<sub>2</sub>SO<sub>4</sub> and heat when

you get dense white fumes which

till use all HNO<sub>3</sub> is removed leaving SO<sub>4</sub> then

filter with H<sub>2</sub>O, white ppt.

continuing take PbSO<sub>4</sub> ppt & pour the

with NH<sub>4</sub> bicarbonate and this dissolved

the Pb and acidify filtrate & add H<sub>2</sub>O  
which will give a yellow ppt of PbCrO<sub>4</sub>

Filtrate reprecipitate Bi add NH<sub>4</sub>OH

and get Bi(OH)<sub>3</sub> white ppt dissolve

in Test for Bi, As, Sb, Sn, O<sub>2</sub> + Bi + get

biominal black ppt

Filtrate Cu, not is always blue

confirm with <sup>flame test</sup> blue ppt + add K<sub>2</sub>CrO<sub>4</sub>

acetic acid then Hg<sub>2</sub> and Sn<sub>2</sub> gives Hg<sub>2</sub> and Sn<sub>2</sub>

the color change with H<sub>2</sub>SO<sub>4</sub>

Od. KCN test - confirm separation

and H<sub>2</sub>S & gives Cd S

H<sub>2</sub>N does decompose Cd

but forms a comp. with H<sub>2</sub>N which is not

acted on by H<sub>2</sub>O.



Fe<sup>4</sup> [Fe<sup>2</sup>/O<sup>2</sup>]<sub>6</sub>  
 H<sub>2</sub>FeCl<sub>6</sub>: clay blue ppt  
 Fe NS blood red color  
 Fe<sup>2</sup> NS

or 10 H<sub>2</sub>O

or 11

Fe 4

mix with H<sub>2</sub>O & then add NaOH  
 & hydrogen peroxide and mix after on filter paper  
 Test for Common Oxides

H<sub>2</sub>SO<sub>4</sub> + H<sub>2</sub>NO<sub>3</sub> + Cl<sub>2</sub> = BaSO<sub>4</sub> precipitate

H<sub>2</sub>NO<sub>3</sub> + H<sub>2</sub>SO<sub>4</sub> + H<sub>2</sub>O = H<sub>2</sub>NO<sub>3</sub> + H<sub>2</sub>SO<sub>4</sub> + H<sub>2</sub>O

H<sub>2</sub>NO<sub>3</sub> + H<sub>2</sub>SO<sub>4</sub> then Acetic acid & get

H<sub>2</sub>SO<sub>4</sub> acid not with HCl test KNO<sub>3</sub>

H<sub>2</sub>Cl + H<sub>2</sub>NO<sub>3</sub> + H<sub>2</sub>SO<sub>4</sub> = AgCl ppt

H<sub>2</sub>PO<sub>4</sub> + H<sub>2</sub>SO<sub>4</sub> + H<sub>2</sub>O = H<sub>2</sub>PO<sub>4</sub> + H<sub>2</sub>SO<sub>4</sub> + H<sub>2</sub>O

H<sub>2</sub>CO<sub>3</sub> acidify & effervescence due to

H<sub>2</sub>PO<sub>4</sub> acidify & effervescence due to

H<sub>2</sub>PO<sub>4</sub>

H<sub>2</sub>SO<sub>4</sub> acidify & effervescence due to

dark blue ppt

yellowish black color then red mass

reddish purple color with description

at water like H<sub>2</sub>PO<sub>4</sub> = H<sub>2</sub>PO<sub>4</sub> + H<sub>2</sub>O

precipitate with lime water

decolorized ppt (H<sub>2</sub>PO<sub>4</sub> + H<sub>2</sub>O)

forms at H<sub>2</sub>PO<sub>4</sub> + H<sub>2</sub>O

Thick jelly mass





# Method of solution of solids

H<sub>2</sub>O

HCl dil. concn

HNO<sub>3</sub> " " "

alkali  
fusion

Ce(NO<sub>3</sub>)<sub>3</sub> - H<sub>2</sub>O

BaCl<sub>2</sub> - H<sub>2</sub>O

General Method of solution

" " method of solution

Na<sub>2</sub>SiO<sub>3</sub>

Method of solution

CaCO<sub>3</sub>

Mg

Fe

Fe<sub>2</sub>O<sub>3</sub>

Fe<sub>2</sub>SO<sub>4</sub> concn HCl

BaSO<sub>4</sub>

Na<sub>2</sub>CO<sub>3</sub>

fusion

weak HCl

Laboratory Apparatus.

List A

5.8 inch Test Tubes

3 0 inch " "

1 7 " " "

glass rod & glass tubing

1 Two hole rubber stopper

1 Box Filter paper



apparatus

List B.

1 Flask. flat bottom.

1 Thistle tube

1 50 cc graduate

1 100 cc "

2 Beakers

1 Bottle small pb  $\text{H}_2\text{C}_2\text{O}_4$ .

1 Bottle small  $\text{NaOH}$

1 Salt mouth + stopper

4 large lit red bottles for acids.

$\text{H}_2\text{SO}_4$ ,  $\text{HNO}_3$ ,  $\text{HCl}$ , &  $\text{NH}_4\text{OH}$ .

HERE LIES WILLIAM JOHNSON.

NOW HE IS NO MORE  
WHAT HE THOUGHT WAS  $H_2O$   
WAS  $H_2SO_4$ . L.H.J.



Fructose (Gen Chem Co. (?)  
1 car)

Sulphuric acid to B plant

86 lbs per inch, 2 Tons

Caustic soda (Mather-Nye & Co. nodules) )

101.6 lbs per inch - 50.0 Tons  
700 lbs per drum.

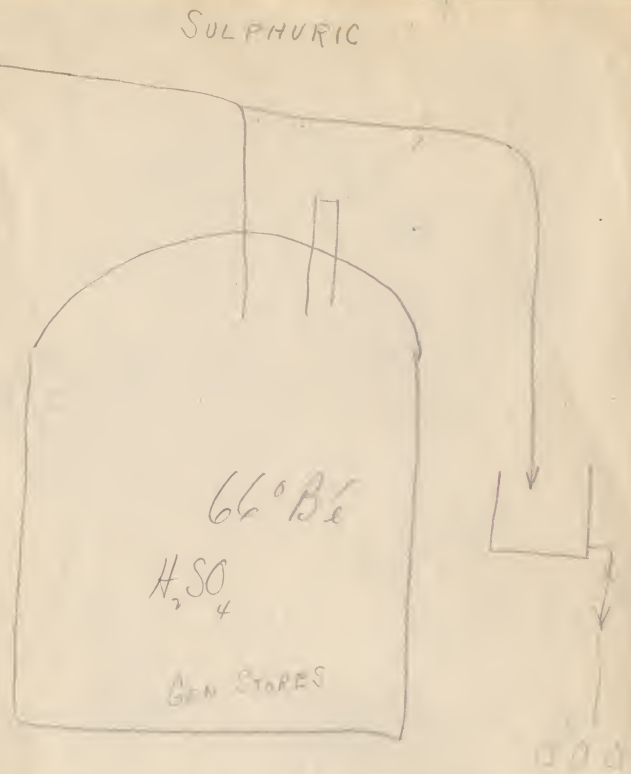
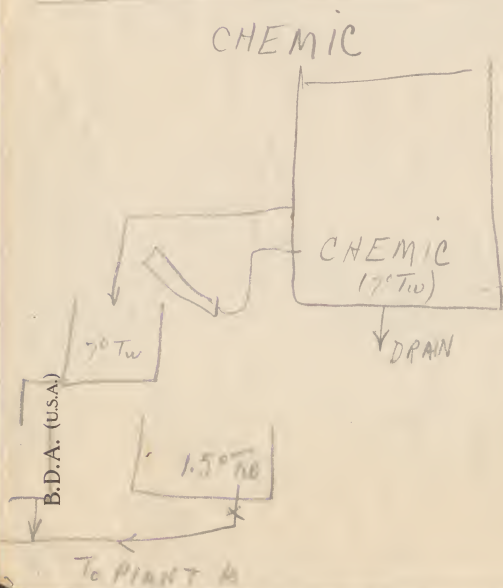
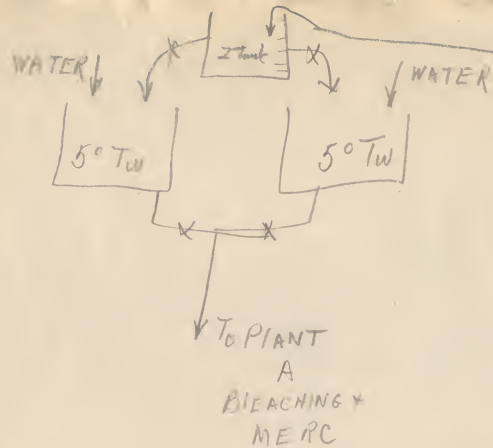
As sent to B plant

$$\frac{101.6 \times 101.6}{700} = \text{dons.}$$

Record this figure and drop  
nearest whole don. As will  
satisfy change the fraction.

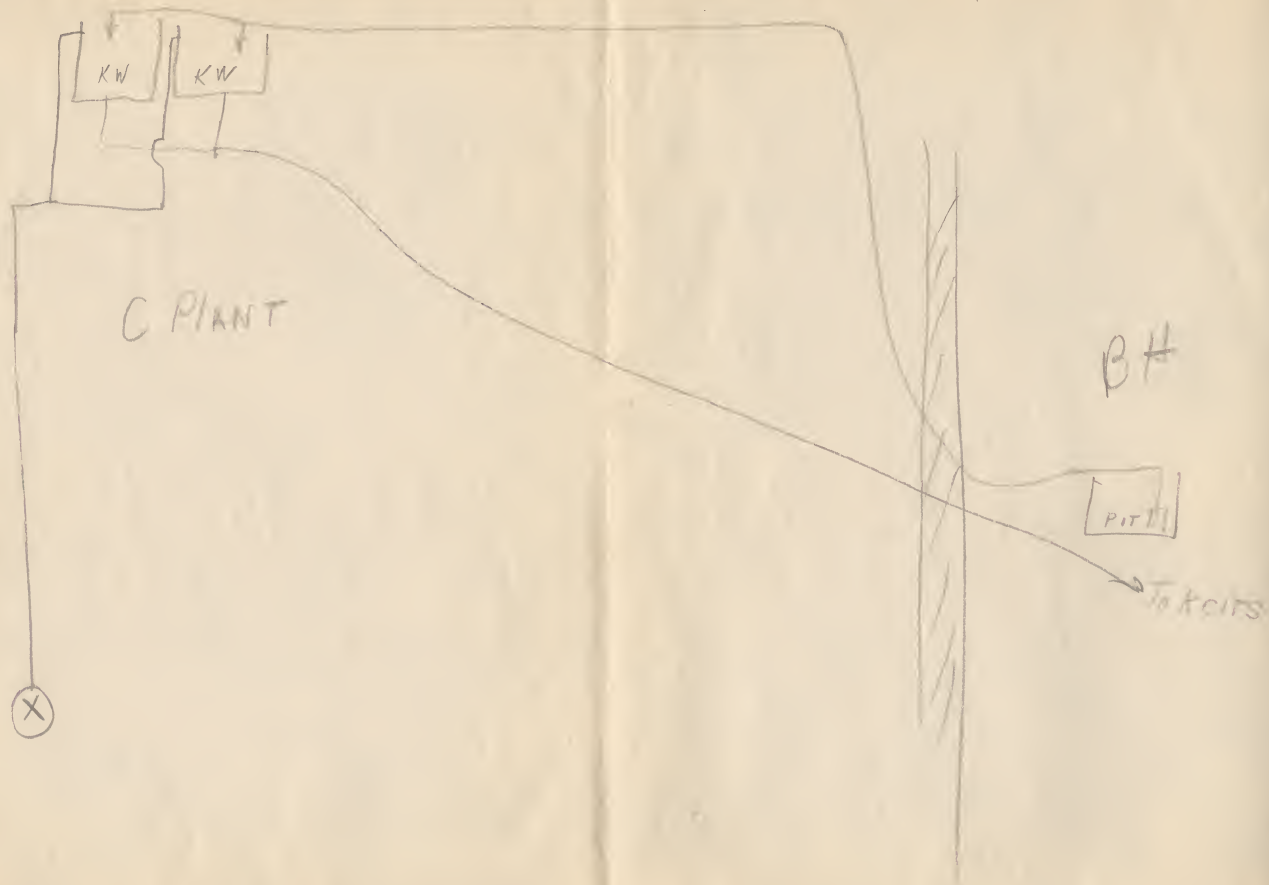
Make note on requisition  
sent to B plant from 4 plant  
stocks

Chlorine (John B. Lewis)  
50 cyl





WASHING



B.D.A. (U.S.A.)

# CAUSTIC SODA

A PLANT

